Please add the following new claim:

-25. A semiconductor device manufacturing method consisting of the steps of:

(a) bringing a gas or an aqueous solution containing an etchant selected from the group consisting of ammonia, hydrazine, amines, amino compounds, and their derivatives into contact with a surface of a substrate, on which an insulating film is exposed, to chemically activate the surface;

(b) subsequent to step (a), reforming the chemically activated surface as formed in step (a) by contacting the chemically activated surface with a gas or an aqueous solution containing an oxidizing agent selected from the group consisting of hydrogen peroxide, ozone, oxygen, nitric acid, sulfuric acid, and their derivatives to form an oxide film on the chemically activated surface;

(c) subsequent to step (b), forming an insulating film by CVD on the oxide film as formed in step (b).--

REMARKS

A petition for a two month extension of time has today been filed as a separate paper and a copy is attached hereto.

The rejection of claim 16 for indefiniteness is respectfully traversed. The examiner is reading applicants' term "derivative" "in a vacuum", i.e., removed from the context of the

remainder of the claim. The "derivatives" referred to in step (a) of claim 16 are also described as "an etchant" and as derivatives of ammonia, hydrazine, etc. It is respectfully submitted that those skilled in the art would know what is and is not a derivative of ammonia, etc. Nothing more is required for satisfaction of the second paragraph of 35 USC 112. That one skilled in the art can determine what is and is not within the scope of the claim is all that is required by the definiteness requirement of 35 USC 112, second paragraph. *In re Conley*, 180 USPQ 454 at 456 (CCPA 1974).

The rejection of claims 8, 9 and 16-19 for anticipation by JP 5-343394 is respectfully traversed. As taught in applicants' "Background of the Invention", the present invention is directed to a specific problem, i.e., the surface dependency encountered in CVD film formation. The teachings of JP 5-343394 have no relevance to CVD film formation, much less relevance to the specific problem to which the present invention is directed. The Japanese reference teaches treatment of a silicon substrate in preparation for thermal oxidation of that silicon substrate. In other words, the Japanese reference does not teach treatment of a surface of an insulating film (the silicon substrate is not an insulating film) and does not utilize CVD to form a film on the treated substrate (thermal oxidation is not CVD).

At the bottom of page 3 of the final action of December 13, 2002, the examiner writes "Kohei discloses where the surface brought into contact with the etchant has a silicon oxide film or a silicon nitride film formed thereon." It is respectfully submitted that the examiner is misreading the Abstract. The Abstract does not mention a silicon nitride film and does not bring

the etchant into contact with a silicon oxide film. The etchant is used as a pretreatment, in preparation for forming the silicon oxide film. The abstract clearly teaches that the etching process precedes thermal oxidation resulting in formation of the silicon oxide film:

> Executing the final etching of the silicon substrate cleaning process with hydrofluoric acid and thereafter introducing the silicon substrate into an electric furnace...
>
> The wafer surface is changed to the hydrophobic state by processing a Si wafer after cleaning the surface thereof with ammonium, aqueous solution of hydrogen peroxide, water, hydrochloric acid, aqueous solution of hydrogen peroxide and water. The Si wafer of which the surface is changed to hydrophobic state is then introduced into an electronic furnace under the atmosphere where oxygen is reduced by nitrogen or inactive gas. The Si thermal oxide film is formed by heating the Si wafer.

Thus, the Japanese "Kohei" reference discloses neither a pretreatment of an insulating film nor film formation by CVD on such a pretreated surface.

The rejection for obviousness over Kohei in view of Ikakura et al is also traversed. Even if the references are *prima facie* combinable the result of combining the CVD film formation of Ikakura et al with the surface treatment of Kohei would not result in anything within the scope of applicants' claims because, as noted above, Kohei treats a silicon surface, not an insulating surface. Accordingly, combining the pretreatment "cleaning" step of Kohei with the CVD of Ikakura et al would not result in CVD film formation on an insulating surface. Likewise, combining Ikakura et al with Kohei would not result with anything within the scope of applicants' claims because the silicon oxide surface formed by thermal oxidation in Kohei is not

treated in any manner. Again, the claims presented here require CVD film formation on the treated or "reformed" surface as formed in step (a) of claim 1, step (b) of claim 16, step (c) of claim 23 and step (b) of new claim 25.

Accordingly, the examiner is respectfully requested to reconsider the rejections of record in light of the present amendments to the claims and the foregoing comments.

Respectfully submitted,

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8. (Twice Amended) A semiconductor device manufacturing method comprising the steps of:

(a) contacting a surface of a silicon oxide film with an aqueous solution containing any one of NO_2 and NO_3; and

(b) forming an insulating film by CVD on the surface as obtained in step (a) after the film-forming surface is contacted with the aqueous solution.

16. (Amended) A semiconductor device manufacturing method comprising the steps of:

(a) bringing a gas or an aqueous solution containing an etchant selected from the group consisting of ammonia, hydrazine, amines, amino compounds, and their derivatives into contact with a surface of a substrate, on which an insulating film is exposed, to chemically activate the surface;

(b) subsequent to step (a), reforming the chemically activated surface as formed in step (a) by contacting the chemically activated surface with a gas or an aqueous solution containing an oxidizing agent selected from the group consisting of hydrogen peroxide, ozone, oxygen, nitric acid, sulfuric acid, and their derivatives to form an oxide film on the chemically activated surface;

(c) subsequent to step (b), forming an insulating film by CVD on the oxide film as formed in step (b).

23. (Amended) A semiconductor device manufacturing method comprising the steps of:

(a) preparing a mixed solution containing ammonia (NH_3), hydrogen peroxide (H_2O_2), and water (H_2O);

(b) heating the mixed solution at a predetermined temperature for a predetermined time so that NO_2^- and NO_3^- are formed in the mixed solution in predetermined concentrations;

(c) contacting a surface of a silicon oxide film with the mixed solution after the heating; and

(d) subsequent to step (c) forming an insulating film by CVD on the surface as obtained in step (c).